Thermanit MTS 616 LNi

Stick electrode, basic coated, creep resistant

Classifications

EN ISO 3580-A	AWS A5.5 / SFA-5.5
E Z CrMoWVNb9 0,5 2 B 4 2 H5	E9015-B92 H4
	E9015-G

Characteristics and typical fields of application

Thermanit MTS 616 LNi is a core wire alloyed stick electrode with basic coating. The 9Cr-1.8W-0.5Mo-V-Nb type weld metal exhibits a fully tempered martensitic microstructure with favorable mechanical properties in post weld heat treated condition. The range of application covers joint welding of similar alloyed creep strength enhanced ferritic steels like ASTM grade 92 tube, pipe, plate and forgings used in the thermal power industry. Thanks to the restricted Mn+Ni content of less than 1.0 wt. % the A_{c1} Temperature is certainly above 790 °C.
The chemical composition of Thermanit MTS 616 LNi is optimized in order to provide a high creep resistant and ductile weld metal after post weld heat treatment along with low level of trace elements. Its basic coating guarantees low level of diffusible hydrogen in the weld metal.

Base materials

Similar alloyed creep reistant steels and casting like
1.4901 – X10CrWMoVNb9-2
ASTM A213 Gr. T 92; A355 Gr. P92; A187 F92, A369 FP92; A1017 Gr 92
KA-STBA29; KA-STPA29
NF 616

Typical analysis

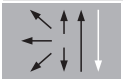
	C	Si	Mn	Cr	Ni	Mo	W	V	Nb	N	B
wt.-%	0.1	0.2	0.8	8.8	0.1	0.5	1.6	0.2	0.04	0.05	0.003

Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact energy ISO-V KV J
	MPa	MPa	%	20 °C
T	600 (≥530)	730 (≥620)	21 (≥17)	60 (≥41)

T: tempered (760 °C / 4 h)

Operating data



Polarity	DC +
Electrode identification	Thermanit MTS 616-LNi E9015-B92
Redrying	300 - 350°C / 2 h

Dimension mm	Current A
2.5 × 300	70 – 100
3.2 × 350	90 – 135
4.0 × 350	130 – 170
5.0 × 450	160 – 240

IPreheat and interpasstemperature should be controlled between 200 and 300 °C. In order to optimize impact energy a welding technique that ensures small layer thickness and low heat input is recommended. After welding the weld seam must be cooled below 100 °C in order to complete the martensitic transformation prior to PWHT commonly carried out between 750 and 770 °C for at least 2 h. The un-tempered martensitic microstructure is very sensitiv to cold and stress corrosion cracking. Therefore, residual welding stressed as well as external stresses must be reduced to a minimum. Any exposure to moisture must be avoided in the as welded condition. Keeping a temperature above the dew point or storage in humidity controlled atmosphere is highly recommended. For heavy wall components conducting a dehydrogenating heat treatment between 260 and 400 °C before cooling down to room temperature can be recommended, bridging the gap between welding and final post weld heat treatment.

Approvals

CE